

Thermodynamics Notes

Thermodynamics - _____

*** Heat always moves from _____ place to _____ place

Examples:

Hot objects in a cooler room will _____ to room temp

Cold objects in warmer room will _____ to room temp

3 Methods of Heat Transfer:

1) Conduction

2) Convection

3) Radiation

Conduction:

Example – When you heat a metal strip at one end, the heat travels to the other end.

As the metal is heated, the particles vibrate. These vibrations make the adjacent particles vibrate. When the vibrations are passed along, so is the _____.

*** This is called _____.

Additional examples:

Question: Why does metal feel colder than wood even when they are both at the same temperature?

Metal is a _____, and wood is an _____. Metal conducts (drives) heat away from your hands. Wood does not conduct the heat away from your hands as well as the metal, so the wood feels warmer than the metal.

Convection:

The transfer of heat by the circulation or movement of heated parts of a liquid or gas.

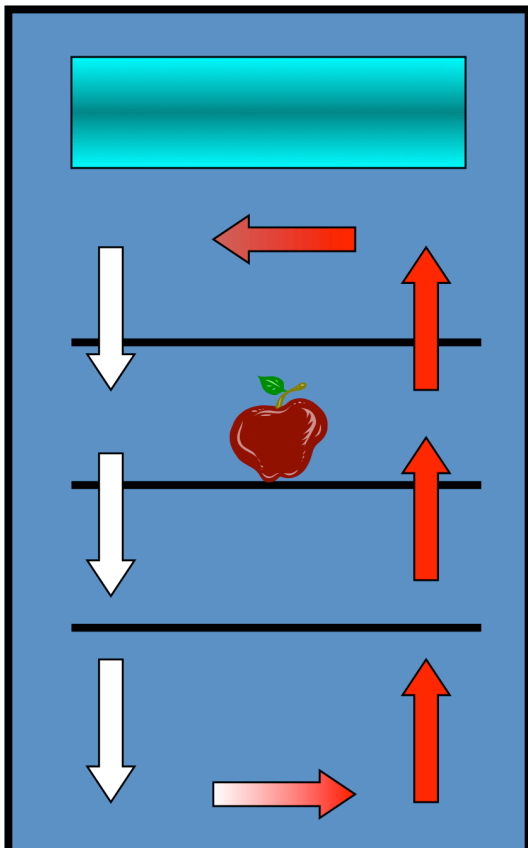
*** Cooler fluids are _____

*** Warmer fluids are _____

Therefore, cooler fluids _____ and warmer fluids _____.

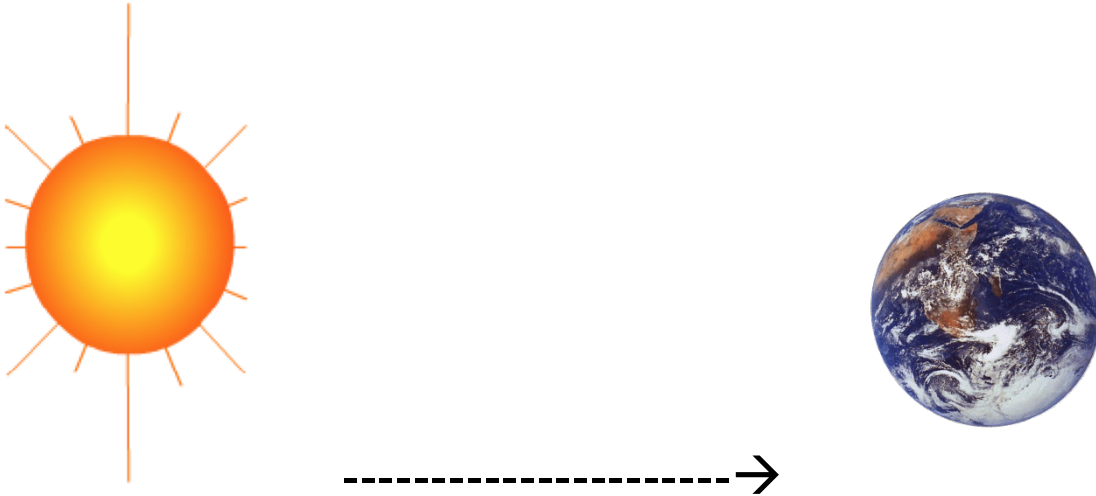
Example:

Question: Where is the freezer compartment in a fridge?



Radiation:

Question: How does the heat energy get from the sun to the earth?



*** There are no particles between the sun and earth, so it cannot travel by conduction or convection.

Rules of Radiation:

- 1) Radiation travels in straight lines
- 2) Radiation can travel through a vacuum
- 3) Radiation does not require particles to travel through
- 4) Radiation travels at the speed of light

Final Questions:

1) Why does hot air rise and cold air sink?

2) Why are shiny foil blankets wrapped around marathon runners at the end of a race?